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THE
SCIENTIFIC AMERICAN:
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☞See Advertisement on last page.

Poetry.

THE HUSBAND TO HIS WIFE.

Long years have past since first we met ;
And though we're somewhat altered now,
Time hath not taught us to regret
Our early love,—our plighted vow !

Our hearts remain the same, dear wife !
Our troth hath stood the test of years !
And midst the varying scenes of life,
Our trusting love unchanged appears !

Like some bright star that, when the night
Hath veiled the glowing orb of day,
Still sheds its mild and steady light
Around the lonely traveller's way.

Our lot hath not been free from care,
(Whose ever was ?) and grief and pain ;
But He, who hears and answers prayer,
Nerved us our burthen to sustain.

If friends were changed—or fortune fled,
Our hearts ne'er felt a wish to roam ;
For Love's pure, undimmed ray was shed
Around its holiest temple—Home ?

And still its cheering beam is cast
On every moment of my life,
Though more than forty years have past,
Since first I blessed thee *as my wife !*

Hail, wedded Love ! When man was driven
From Eden's bowers of happiness,
It was by God in mercy given,
The wanderer's drooping soul to bless.

Ages have rolled away, and still,
(Whatever heartless worldlings say,)
Undimmed by storms, unchanged ill,
All brightly burns its holy ray !

And oh ! as we have felt its power,
Dear Wife ! throughout the hallowed past,
So may its beam, till life's last hour,
Around our trusting hearts be cast.

HE STOOD AT THE ALTAR.

He *stood* at the altar,
(Because he'd no chair,)
With Brass rings on his fingers,
And lard on his hair.

He stood at the altar,
With a watch in his fob,
A young whiskerando
As straight as a cob.

He stood at the altar,
In humanity's guise—
A pin graced his dickey,
And goggles his eyes.

He stood at the altar,
As shrewd ones have said,
Without *cents* in his pockets,
Or *sense* in his head.

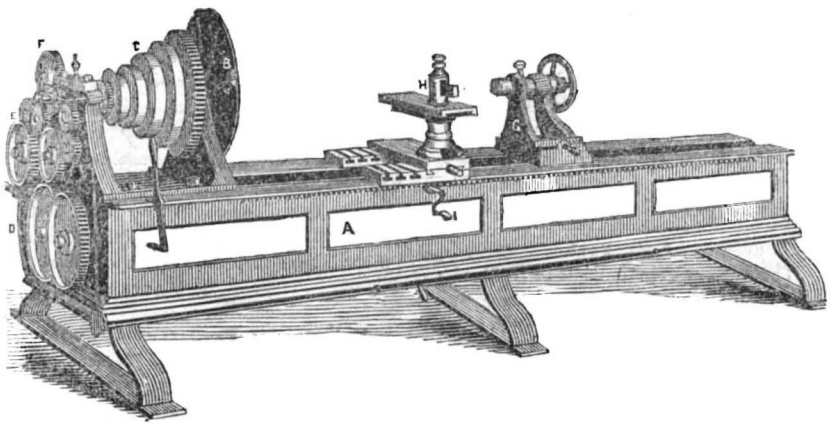
The way they do it.

'Wal, wife,' said a countryman, yesterday, 'I dont see, for my part, how they send letters on them ere wires without tearing 'em all tew bits.'

'Law me, they don't send the paper, they just send the writin' in a fluid state.'

'Oh, that's the way, hey ?'

HARTSON-S PATENT LATHE.



Those who saw this valuable machine at the Great Fair, had but one opinion regarding it, and that opinion was its superiority over others. It is not possible to give a full description of its parts by one view, but a single glance at the above perspective engraving will at once convey to the practical machinist some idea of its great worth and some just conception of its important parts.

DESCRIPTION.—A, is the frame. B, is the face plate on the spindle. C, are pulleys, geared to a small cog wheel which connects with F, on the back shaft, which is connected with the back gearing and gears into the spindle wheel, which communicates with E, a wheel on the back driving shaft and drives the screw giving motion to the rest. D, are intermediate wheels co-operating with the nest wheels and E on the driving shaft. H, is the slide and rest, the slide being marked with accurate degrees for correct mensuration in the turning. I, is a handle to move the slide and rest on the rack. Below is another handle J, attached to the rods for shifting the motion of the wheels. G, is the moving or poppet head, the use of which is so well known.

To this brief description of this machine, we will only add that from the operation of this lathe at the Fair, a number of orders for others have been given and this lathe was sold and could have been sold a dozen times over The work is substantial, beautiful and correct, and a good article is always a cheap ono.—Mr. Hartson's machine shop is at No. 42 Gold street, New York, where Turning Lathes, Drilling and Planeing machines are made of a very superior finish and quality.

Harvests Without Previous Sowing.

In the Schnellpost of Wednesday, we find an account of a method of compelling the wheat plains to become perennial, like grass, and to perfect in grains annually without annual growing of seeds which has been successfully practiced at Constance in Germany. It was discovered by the steward of an estate named Kern. His method, after ploughing and manuring the land, and sowing it with Summer or Winter wheat, is to mow it in the Spring before the ear makes its appearance. This process is repeated several times in the season and the product is used as hay. The plant is then allowed to grow and be cut in the ordinary manner. The next year it ripens earlier, and bears more abundantly than wheat treated in the ordinary manner. It is manured in the autumn like grass in the meadows, and in Spring cleared from weeds. In this manner from one field four successive harvests have been gathered.

Brick Back Logs.

Brick back logs to fire places where wood is burned are very useful and economical. The brick takes up the heat slowly and retains it, whereas iron backs take up the heat quick and lose it as rapidly, and besides, become very hot and burn up the wood, thereby producing a loss. Persons who use brick and common flat-irons heated to place to the feet of sick persons, will notice how much sooner iron looses the heat and becomes cold than brick.

The Priest and his Bargain.

The Courier de Lyon relates that a few days since the priest of a town near the Loire while returning from receiving his salary, riding a spirited horse, was stopped by two robbers, who took all his money and exchanged horses not losing by the exchange. On returning home and examining his new steed, he found tied to the saddle a bag containing 2,000 francs, and before he could ascertain the extent of his riches, his horse which had thrown its riders, came running home.

Philosophy of Churning.

The cream, of which butter is made, consists of minute globule, about one-ten-thousandth part of an inch in diameter, each surrounded by a very thin transparent pellicle of film, that prevents them from adhering to one another. During the agitation by churning, these little pellicles break, and the fatty portions of the globules unite into a mass, forming butter, whilst the buttermilk is left behind which consists principally of cassein, (the basis of cheese,) milk sugar and a watery fluid, called serum.

Ether in Mania.

In the licensed lunatic wards of the St. Marylebone Infirmary, Dr. Boyd has tried the inhalation of sulphuric ether in four cases, one chronic and three acute, of violent mania, amongst the females, with excellent effect, and without any unfavorable results. The tranquilizing effect was produced at various intervals of from two to ten minutes—at a time, too, when the patients were unusually violent. All of them appeared to become intoxicated. Before this effect was fully produced, their anger in every instance seemed turned to joy—a soporific effect was the utmost that was produced in any case operated upon.

That Old Tea-Kettle.

Don't throw away that old crackad tea-kettle, I say, said Aunt Patty Parley. It is one of the most useful articles in the pot closet. When you have a cracked tea-kettle, then you have the best thing in the world for cooking potatoes.

Wash them, cut off the end where the eyes are thick, and then put them in the tea-kettle without any water, and hang it over a moderate fire, and in half an hour or so, you will have your potatoes baked, dried and mealy, and just the very thing for a good dinner. The nose of the kettle allows all the moisture of the vegetable to escape, and a cracked tea-kettle is essential to good eating.

RAIL ROAD NEWS.

Disastrous Collision.

About noon on Tuesday last a collision took place on the Western Railway, 5 miles east from Pittsfield, Mass., between one of the trains which left the East Albany depot on that day, and a wood train. The engines driving the two trains, the Albany and Louisiana, were almost demolished. We regret to state that eight men employed in working the trains, were more or less injured, one man so much so that he had to submit to the amputation of one of his legs.

Another Accident.

We learn that as the New Haven train of cars for Boston last Monday evening, had arrived within two miles of Westborough, they came in collision with the down freight train, demolishing one or two of the freight cars and somewhat injuring the engines. The accident was occasioned by the breaking of some portion of the engine attached to the passenger train, the conductor of which sent a man ahead to stop any train which might be coming, but not in time to prevent the collision. No person received any injury.

What is the use of the telegraph, if it cannot be employed to prevent railroad collisions on the railroad. With the telegraph at the command of any railroad company, no collision need ever take place.

Ohio Railroads.

The Sandusky, Ohio, Mirror states that eastern capitalists have just closed an engagement with the Mad River Railroad Company, under which they are to assume the management and control of the road, finish its construction, and put it in order for freight and passenger business through from Cincinnati to Sandusky City, at the opening of next spring's business, or as soon as men and money can do it. The distance of continuous railway will be 218 miles, which can be run in 11 hours. The Mirror also states that fast boats will also be built during the winter, to perform trips between Sandusky and Buffalo in 13 hours, thus connecting Cincinnati, Sandusky and Buffalo by railroad and steamboats, in 24 hours running time.

Railroad Survey.

Captain Henderson and a party of the men engaged in making the survey of the line of railroad to connect Halifax with Quebec have dispersed, one portion having proceeded to Boiestown, another to the head waters of the Richibucto, and a third to the Bend of Petticodiac. The report given of their progress in the counties of Gloucester and Restigouche in New Brunswick, as well as on the Canada side of the Bay de Chaleurs is said to be very satisfactory.

Influence of the Periods of the Day upon Births and Deaths.

Dr. Caspar has arrived at the following conclusions. The greatest number of Births occur between nine o'clock in the evening and six in the morning, whilst the smallest number occur between six o'clock in the morning and nine in the evening. Individually regarded, the ratio of deaths from Inflammations, pthisis, and pulmonary hemorrhage, is greater in the afternoon: from fevers and exanthemata, just before midnight; from cerebral appoplexy, during the day; and from diseases of the nervous system in general, in the hours which immediately follow midnight.

Who are the Happiest Men.

They who live to benefit others—who are always ready with a word to encourage—a smile to cheer—a look to persuade, and a dollar to assist. They are never fearful least a good trade or an excellent bargain should fall into the hands of a poor neighbor, but the more rejoice when such an one meets with encouragement.

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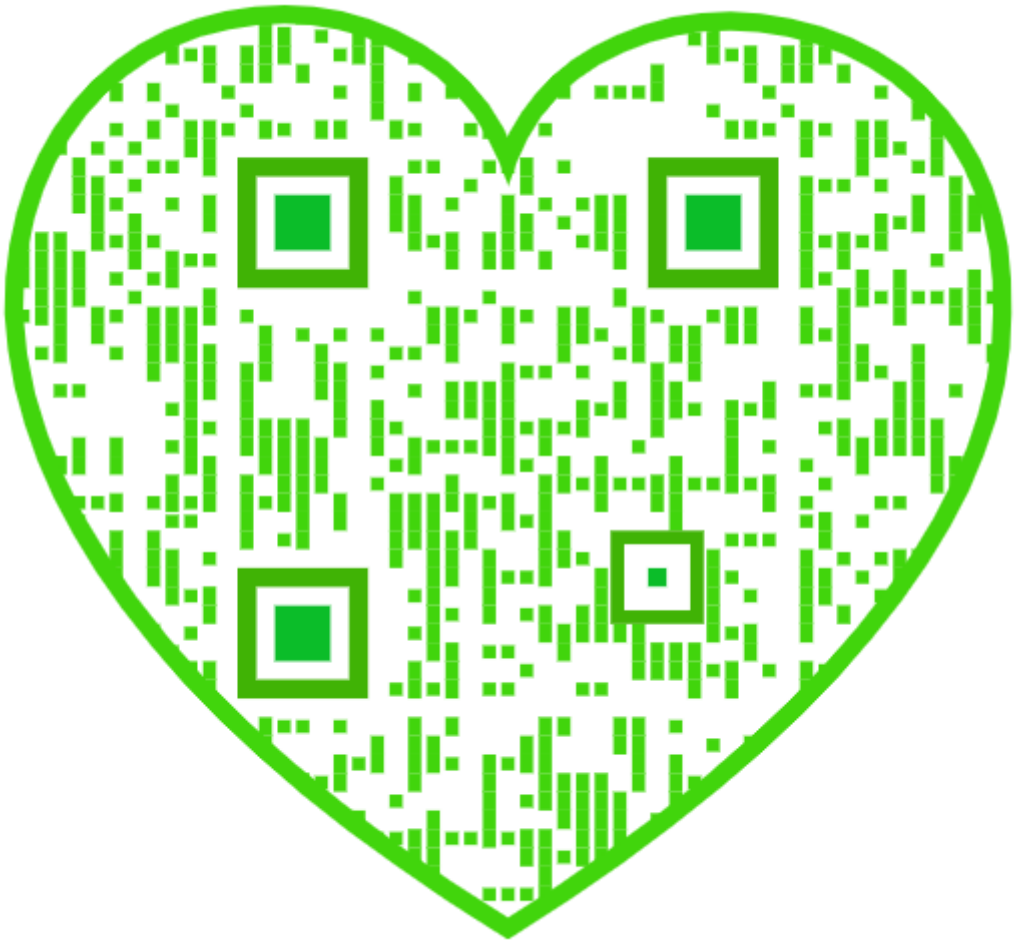

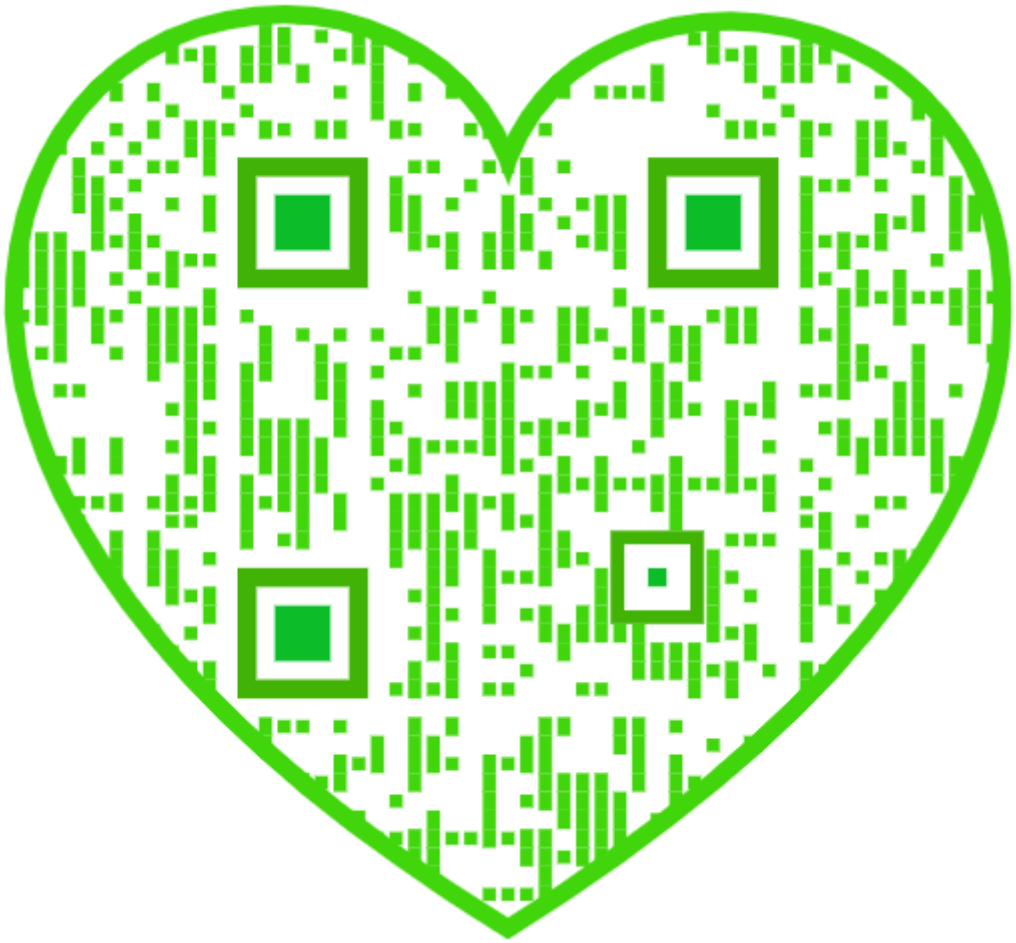

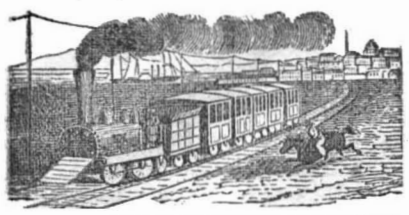

FROM EUROPE.

By the late steamer from Europe, we learn that there has been an insurrection in Lyons, France, and the whole country as usual was full of strange intended and accidental accidents.

Baron Humboldt, the great traveller, was confined to his room by severe sickness.

The Pope and Austrian government are going to settle their quarrels. The Austrian troops, however, were not removed from Ferrara.

A large rock has fallen from a mountain in Norway, and destroyed a great number of houses and killed 230 persons.

The money market in England is in a dreadful state and the price of provisions has gone still further down.

The Macedonian frigate was nearly wrecked on the coast of Scotland, but at last found refuge from the storm in Lamlash Bay, with the loss of some of her rigging.

Spain is in a very unsettled state.

The English have got a part they call Hog Lane in Canton, China. The factories are to be built there. A rare chance for bacon.

The cholera is making fearful ravages in Russia.

A great sea fight occurred in the Malay seas, between a British ship and 11 pirate junks, 300 of the pirates were killed and only 3 of the English.

From the great commotions among the working classes of Britain, many predict a revolution but there is not half the excitement yet that there was in 1819, and should consuls should go down to at 50, instead of 84, no one need expect a revolution there.

The Missouri French steamer arrived here on the evening of Monday last, after a passage of 18½ days. The Cambria arrived at Boston on Tuesday morning after a passage of 14 days.

Wooden Legs.

We have heard that the sum of $75,000 has recently been offered for the patent right of an artificial leg, lately invented in New Hampshire, and which was noticed in our columns about three months ago. It is estimated that one leg per day is wanted in New England alone, while the Mexican war is creating a good market at the South.

There is nothing like advertising useful inventions. There are many men who are now in poverty, men of splendid minds, good inventors, who would have now had an abundance of this world's goods, but for the lack of one thing, publishing and describing their inventions in a paper like the Scientific American.

Flying Cows.

On the north coast of Ireland, a gentleman saw above a hundred cows preying upon muscles. The mode of doing this was remarkable—each cow took a muscle up in the air forty or fifty feet high, and let it fall on the stones; and thus breaking the shells got possession of the animal.

Some time ago the above paragraph appeared in the Sci. American with the addition of an *r* before the *o* in cows. But some papers have scientifically made the Fish Cow as funny an animal as a Kilkenny Cat, for it seems they can go up forty or fifty yards in the air like true balloonites and they can devour muscles like the learned sheep that "chewed snuff and snuffed cavendish."

The above extract has appeared to our knowledge in eight different papers.

Portland Locomotives.

We learn that the Portland Company have made a contract with Mr. Neal, President of the Portland and Boston Railroad, for two locomotives and six merchandize cars for that road; and that they have also just contracted with the Atlantic and St Lawrence Railroad Company to equip the first and second sections of the latter road with locomotives and cars.

Howell's Tanning Machine.

The superiority of Mr. Howell's method of Tanning with his machine over the old process must be apparent to all that know any thing of the business, and we should think would be universally adopted at once.

We gave an engraving of the machine in the Scientific American, vol. 2, No. 5, but until we examined it at the Fair this year, we find we had not fully appreciated its merits.

The invention has been fully tested and in no case where used has it given but perfect satisfaction. It requires but six days to tan a calf-skin as thoroughly as by the old process 3 months and other hides and skins but a proportionate short time.

Mr. H. has an office at No. 3, Nassau St, where he can be consulted as to the sale of Rights either by States, Counties, or singly. He has a large quantity of certificates from those that have used the machine that he will be pleased to exhibit at his office.

New York.

The number of periodicals in N. Y. city is, says the Am. Messenger 500; newspapers 98; miscellaneous schools, 110; moral benevolent and literary associations, 116; churches 227.

The exports during the month of Sept. amounted to $3,216,752.

The Smallest Horse Yet.

A mere pigmy horse, weighing only 45 lbs. the smallest one that ever lived, has been sent to Gen. Tom Thumb, as a present, from Java. It is a great wonder, and the little general will find him a valuable acquisition to his personal convenience.

Russian Ukase.

An imperial ukase has been promulgated in Russia, which commands all civil functionaries who possess a fortune to state exactly in their returns *by what means they have acquired it.*

Large Cargo.

The steamer Magnolia, says the N. O. Delta, brought down from Milliken's Bend, 2,265 bales of cotton—the largest load received by any one boat this season. The staple is coming in freely, and the receipts of the 1st inst., to yesterday evening are already 15,691 bales against 5,120 to the same period last season.

Earthquake at Dominica.

Two shocks of an earthquake were felt at this island, one on the 5th September, the the other on the 6th. A church at Marie Galante was destroyed, and other buildings injured.

Great Curiosity.

Barnum, the great curiosity hunter, is anxious to get an officer of a steamboat who *was* to blame for a dreadful accident. He calculates the exhibition of such a monstrosity would make a fortune.

Haviland and Tuttle's Water Wheel.

We remarked last week that these wheels were manufactured in this city at the Foulton Foundry, which should have read Foulton Foundry, South Boston, and manufactured by Thomas Thatcher.

A Relic.

Capt. Cook's chart of the N. W. Coast of America and the N. E. coast of Asia, has been presented to the Cincinnati Mercantile Library by a descendant of the officer in Cook's expedition, who drew it with the pen. It is said to be equal to copper-plate.

Colt's Revolving Pistols.

Government has decided to arm a regiment of mounted men with this most effective weapon, and Mr. Colt (whose factory is at Hartford) is now at work upon a contract for one thousand for the Government. The contract is nearly completed.

The *Archives Israelites* says: "It is calculated that the total number of Jews spread over the surface of the globe is 6,000,000 of souls. Of these 180,000 are in the enjoyment of civil rights, viz: 30,000 in the United States of America, 50,000 in Holland, 10,000 in Belgium, and 90,000 in France. In England 20,000 are as yet incompletely emancipated.

The book of autographs at Shakspeare's House sold for seventy guineas.

Mechanics' Mutual Protection.

By a letter from Peter B. Leddy, Esq., Grand Protector, of Oct., 12th, we are grieved to hear of the affliction of that excellent brother, Past Senior Lemuel Wooster. While he was engaged in superintending the erection of a section of the Burlington Rail Road his whole family who were residing in Albany were attacked with severe sickness, and with the exception of Mrs. Wooster, they are now all numbered with the dead.

On the 5th September William L. son of Lemuel and Emeline Wooster aged 5 years and 3 months also on the 18th Frances, aged 6 months, and on the 19th Mary M. the only surviving child aged 2 years and 9 months.

The officers of Protection No. 22, Albany, elected for this quarter, are: H. M. Merriman, S. P; E. N Shufflebotham, J. P.; A. Halnon, R S.; J. W. McDonald, F. S.; P. B. Leddy, Treas.

Five new Protections have been instituted this quarter and the number of members admitted, have surpassed all expectation.

R. MACFARLANE, P. S.

Nutritive Properties of Sugar.

The nutritive properties of sugar are much underrated in this country. As an aliment, Dr. Rush of Philadelphia, maintains that sugar in a given quantity of matter of any substance in nature. Horses and cattle when fed wholly on it in St. Domingo for some months, when the exportation of sugar and the importation of grain were prevented for want of ships, during the crop time in the West Indies, all appeared fat and flourishing. The cattle fed on the cane tops, become slick and in fine condition. The negroes drink freely of the juice and become fat and healthy. Sir Geo. Stanton observes that many of the slaves and idle persons hide themselves among the canes and live entirely on them for a time. In that kingdom the emperor compels his body guard to eat a certain quantity of sugar every day, that they may become fat and look portly. Sugar and rice constitute the common food of the people, and every kind of domestic animal is fed on sugar. Plague and malignant disorders in the breast, are unknown in the countries where sugar is abundantly eaten as food.

Iron In North Adams, Mass.

We learn from the North Adams Transcript, that the North Adams Iron Company make about forty tons best pig iron per week, which is of a very superior quality. It is used almost exclusively by government contractors, in the manufacture of grape and canister shot. It combines, in a rare degree, fusibility and tenacity. The same company are about putting in operation a puddling furnace for the manufacture of wrought iron from the ore.

A report is prevalent that Mr. Macdonald, an inhabitant of Montreal, has been declared heir to the Dukedom of Tarentum and the property attached thereto. The dukedom is in Italy, and was created by Napoleon in favour of the celebrated Marshal Macdonald.

The Count D'Orsay it seems, has presented to the British public a likeness, mental and and physical, of Jenny Lind, in the form of a statuette, which, it is said for grace and elegance, cannot be surpassed.

The coopers of Wilmington, after having been on a strike for several weeks, have gone to work, and agreed to make barrels for twenty cents and hogsheads for $1, 05. On the latter they raised five cents.

The Turkish Government has sent a scientific expedition into Mesopotamia for purposes of exploration. What next?

From the returns just published, of the number of members in the Wesleyan Society, it appears that there are in Great Britain 339,379.

A line of electric telegraph is in active preparation along the railway from Vienna to Prague.

Some one calls the time of squeezing the girls' hands "the *palmy* season of life."

THE GREAT FAIR.

Guyon's Water Wheel.

We have observed with no little satisfaction the appearance at the Fair of this valuable invention. Its simplicity of construction, its applicability to some streams where no dam need be made, makes it a subject of economical consideration to many men, especially for small factories, mills, and for the farmer who has a small stream on his farm. It is a horizontal wheel discharging its water not on, or by the periphery, but by discharge buckets just inside of the rim or periphery.

Malleable Shaft Tug.

This tug is a very valuable invention. Its convenience and safety are beyond doubt. It conduces both to safety and is more durable than the leather tug and can be adjusted to any single harness in a very simple and economical manner. Invented by Joel L. Hoyt, Port Jervis, Orange Co., N. Y.

Thompson's Life Boat.

This boat is exceedingly unique in its adaptation to the purposes of a common as well as a life boat. It has simply false bows and side buoys lashed to a common sail boat, whereby it is immediately transformed into a life boat. Jack says that "with this boat there is some chance of his life in case of shipwreck."

Knox's Hats again.

We notice among other fine things at the Fair a case of beautifully manufactured Hats from the establishment of our worthy friend, Charles Knox, 128 Fulton street, which seem to surpass in style every other specimen exhibiting.

Stones' Sofa Bedstead.

In our description of Mr Stones' Sofa Bedstead last week, we made a mistake in saying, "B is lifted and set upon D" It should have read, "D is lowered down, and B slides in over D. When B is drawn out, D is raised up on a level with B, and retains that position by means of moveable self-acting legs.

Patent Agency.

Applications for Patents made at this office, on the most reasonable terms. Neat drawings, specifications, and engravings of the first character, and cheaper than anywhere else. Notices of new inventions, Agency for the sale of Patent Rights, and all business of that nature, promptly attended to. Those who have patent rights to dispose of will find a good opportunity and field for their sale—such as Horse Power Machines and Waterwheels of every description. The largest circulation in the world for advertisements of inventions, &c.

Prof. Agassiz, the Prussian naturalist has been invited to fill one of the Professorships in the Lawrence Scientific School of Harvard University

We must say that Prof. Agassiz is an honor to any country in which he resides.

Dr. Payne, of Nottingham, England, says that for upwards of twenty years he has used treacle in the treatment of burns, with great success. It is applied pure on the injured surface, and at the natural temperature.

One of the most important female qualities is sweetness of temper. Heaven did not give to women insinuation and persuasion in order to be surly; it did not make them weak to be impervious; it did not give them a sweet voice to be employed in scolding.

Messrs. Ball, Tompkins and Black of this city, have completed a most elegant Roman sword to be presented by the citizens of Troy, N. Y., to their fellow townsmen, the brave Gen. Wool.

A shooting match lately came off in Rochester for a purse of $200 between Mr. Rockafellow of Auburn, and G. P. Green, of Batavia. Rockafellow won.

Twenty-seven ships are now on the docks of this city in the course of construction.—They are of the first class, and a number of them steamers.

There are great fears of a famine in Newfoundland this winter, as the potato crop has entirely failed.

The heat of an oven applied to a dead human body, for twelve days, reduces it from 120 to 12 pounds.

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Astronomy.

Mr. W. C. Bond writes to President Everett that the new telescope of Harvard University has resolved the great nebula in Orion. He says:

This morning, the atmosphere being in a favorable condition, at about three o'clock the telescope was set upon the trapezium in the great nebula or Orion. Under a power of 200, the 5th star was immediately conspicuous; but our attention was directly absorbed with the splendid revelations made in its immediate neighborhood. This part of the nebula was resolved into bright points of light. The number of stars was too great to attempt counting them; many were however readily located and mapped. The double character of the brightest star of the trapezium was readily recognized with a power of 600. This is "Struve's 6th star;" and certain of the stars composing the nebula were seen as double stars under this power.

It should be borne in mind that this nebula and that of Andromeda have been the last strong hold of the nebular theory; that is, the idea, first thrown out by the elder Herschel, of masses of nebulous matter in process of condensation into systems.

Heat of the Planets.

Professor Henry of Princeton communicated to the American Association of Geologists, some interesting experiments, showing the analogy between light and heat. The experiments were made with a thermo-electrical apparatus, a very delicate instrument, which will indicate 1-500th of a degree of a Fahrenheit thermometer It has been long known that two rays of light may be so thrown upon each other as to produce darkness. Professor H. showed that two rays of heat might be so combined as to produce cold. Light and heat differ with respect to the length of the waves —those of the latter are longer than those of the former. Experiments were made upon flames. Some flames give little light but intense heat, as for instance the flame of hydrogen gas. If a solid body is plunged into such a flame, the radiant heat will be increased as well as the radiant light.

Experiments made upon the spots of the sun showed that they were colder than the surrounding parts; also that the surface of that body is variously heated.

The apparatus was applied to form a thermal-telescope—when turned to the heavens, the coldest part was found to be directly over head. Thunder clouds, sending forth flashes of lightning, were found to be colder than the surrounding clouds. When turned to the moon there were some slight traces of heat, but those were proved to be from the reflected heat of the sun. He showed this to be the case by an experiment which he performed on ice. In this experiment the ice reflected heat. It has long been known that a burning lens could be made of ice. The thermo-electrical telescope is capable of an infinite improvement. When in a state of perfection it may reveal many new and interesting facts in astronomy, which thus far have only been opened to sight.

Curious Celestial Phenomenon.

A short time ago, a phenomenon was observed in the heavens, at Paris, resembling in form and splendor a comet of the large and brilliant class. The duration of the appearance did not exceed thirty seconds. It appeared suddenly with its maximum lustre, which was sufficiently intense to throw a faint light on the objects around the observer, not unlike the light sometimes shed by the planet Venus in intertropical latitudes. The object became gradually but rapidly fainter, until it melted away from the vision. Its form was that of a comet with a small and brilliant head, and a tail with well defined parallel sides without perceptible divergence. The total length was from fifteen to twenty degrees; the breadth about fifteen minutes of a degree. The object was manifested in the heavens in a direction east, or nearly so, and at an altitude of about sixty degrees, the direction of its length being parallel to the horizon. The time of its appearance, forty minutes past eight, p. m. The firmament was hazy, but free from clouds, and the stars of of the second and third magnitudes were distinctly visible. The elements of its position and magnitude here given are by estimation, the observer being unprovided with any means of instrumental measurement at the moment. All the appearances here mentioned were witnessed by two observers, from whom this statement has been received, one of them having been accustomed to scientific researches. The place whence the phenomenon was seen was the grand avenue of the Champ Elysees.

A New Planet.

Professor Hind of London discovered, on August 13th, another luminary in the group of Asteroids.

This makes the seventh known star in the group of Asteroids. It is of the ninth magnitude, and is remarkable for the eccentricity of its orbit and the length of its period of revolution.

The planet was first observed here on the night of the 27th ultimo, by Professor Hubbard, United States Navy, with the West Transit Instrument.

Sir John Hershel proposes to call this planet Iris, a name which has been adopted in this country.

Iron Mountain of Texas.

We have recently been informed by an intelligent gentleman who resides in Fredericksburg, that the surveyors who have been engaged in running the boundary line of the German Colony, have discovered a mountain near the Conchos river that consists entirely of iron ore. Our informant states that a portion of this ore has been smelted and yields seventy per cent of pure iron. According to the representation of those who have visited this mountain, it resembles the celebrated iron mountain of Missouri. It is not so large as the mountain in Missouri, being only four or five hundred feet high and probably half a mile in circumference. We are informed however that a range of hills extend several miles north of it, that appear to be composed almost entirely of iron ore. If we can rely on the statements of the hunters and surveyors who have visited that section, the iron mines which have been discovered there are inexhaustible. Within a tract of country fifty miles long by twenty broad, extending from the east bank of the Colorado northward towards the Brazo, there is probably sufficient iron to supply all the foundries in the world for the next century. Owing, however, to the scarcity of fuel, this ore, except in the immediate vicinity of the Colorado and its tributaries, will probably remain for many years, perhaps for centuries, as valueless as the sand hills of the desert.—*Houston Star.*

The Church of Saint Sophia at Constantinople.

This Church, which in the year 1453, was converted into a mosque, and which is the the oldest Christian temple in existence, (having been built by Justinian) is at present undergoing, by order of the Sultan, a complete restoration under the direction of M. Fossati, an architect to whom his highness has entrusted this important operation. The work has been already begun by taking off the bed of plaster which covers the superb mosaics with which the walls of Saint Sophia are decorated, and these monuments, not less remarkable relation in to art, than in a historical point of view, will be carefully repaired. The grand Signor has visited the work at St. Sophia, and expressed his satisfaction to M. Fossati.

Height of Water in the Lakes.

The water in the upper lakes is a foot lower than it was last year, and nearly three lower than it was five years ago. This, with the accumulation of sand at the mouths of our harbors, render them much less easy of access than they have been for some years. On the other hand, the water of Lake Ontario is continually growing higher. This fluctuation is constantly going on, the highest variation being about ten feet. The water has been known to rise eighteen inches in one year at the mouth of the Genesee, but this was unprecedented. This rise and fall of water has been much speculated upon, and is as much a wonder of wonders as the continual rise of land in Norway and Sweden, which has risen 1800 feet the last 1200 years.—*Chicago Tribune.*

American Antiquities.

The mounds of the Ohio valley are clearly distinguished from each other by position, structure, and contents. Some are deemed sepulchral; others are connected with the superstitions of the builders; others are the sites of ancient structures, and display the military system of the ancient people. The sepulchral mounds stand isolated in groups; those which are deemed sacred, are found alone.

Silver and copper are the only metals which have been developed from the depositions. The ore of lead is quite abundant, and lead under the circumstances implying a knowledge of its use on the part of the ancient people. No iron or trace of iron has been discovered except in the late deposites, and it is certain that the ancient people were wholly unacquainted with its use.

The implements and ornaments discovered in the mounds are more generally made of stone—and they wrought in the rarest minerals with great skill. Their lance heads and cutting implements were generally made of quartz, some of them from the pure limpid crystals of this mineral, and some from obsidian. From one altar have been taken several bushels of finely wrought spear-heads of milky quartz, nearly all of which have been broken up by the fire. In another altar a slight excavation disclosed upward of six hundred spear-heads

Among the sculptures are also some of the human head, which display not only the characteristic features of the ancient people, but also their modes of adjusting their hair, their style of ornament, &c. The skeletons belong to two eras—those of the tribes inhabiting the country when discovered by the Europeans, and those of the builders of the mounds. None of the skeletons are of extraordinary size, although the bones in some cases seem more massive than usual. Specimens of the carvings displayed no inconsiderable skill and taste.

In these mounds are discovered native silver and copper from the shores of Lake Superior, pearls and shells from the southern Gulf, obsidian probably from the volcanic ridges of Mexico, mica from the primitive ranges of the Atlantic coast, galena from the upper, and fossil teeth from the tertiary depositions of the lower Mississippi, besides numberless other remains.

Affair Between a Man and a Partridge.

A short time ago at Capenherst, England, a hen belonging to a farmer took it into her head to build a nest, and laid several eggs in a field adjoining his house.—During the same interval a partridge also laid several eggs in the same nest. When the period for incubation arrived, the hen first began to sit. Not long, however had she been in possession before the partridge made her appearance, when a general fight took place. The partridge proved conqueror, hatched the eggs, and the varied brood now range the fields together, the chickens equally as wild as the young partridges.

Ballooning in Turkey.

A French aeronaut, named Rosset made an ascent at Bagdad last month, which excited the utmost astonishment amongst the spectators, totally unaccustomed to such a silght. The weather becoming cloudy the balloon disappeared. M. Losset, in descending fell into the Tigris, and escaped with some difficulty. Meanwhile, a report prevailed amongst the population, that he had gone to the moon, so that when he appeared in public, he was such an object of curiosity, that the French Consul was obliged to demand a detachment from the Pacha to protect the house in which he resided.

Railway Cars in France.

Nothing can be imagined more luxurious, in way of seat, than a first class French car. You sit upon figured white silk or damask, and cushions yielding to your slightest movement. You have them at your side, you have them for your head. Brussels carpet to tread upon, silk curtains to shut out the sun, and their construction below is such that you feel no jar, but seem to be swimming through the air.

"Don't rob yourself!" as the farmer said to the lawyer when he called him hard names.

An Alarm at Sea.

The captain of one of our down east schooners found himself one day becalmed in a fog off the Isle of Shoals, near Portsmouth, N H. The vessel lay with a slight motion, when the captain with the quick ear of a seamen, discovered by the creaking sound of cordage, that there was another vessel close upon him, which might run afoul in short order. He had neither gun nor trumpet, to give his neighbor warning of their close approach; and the best thing he could think of was to set his men drumming on some empty casks; but to no purpose, as the sound increased and the vessel was nearing him. As a last effort of ingenuity, he seized a handspike, and applying it to the ear of an old grunter that happened to be on boards, gave it several turns, none of the easiest, which brought forth a squeal almost as loud as the big whistle of our locomotive engines. This signal was effectual; and just before coming in sight of his neighbors craft, bows on, he heard her captain exclaim to the man at the helm, in a voice of thunder, 'Starboard your helm, we're close upon a hog yard.'

The Ophicleide.

There is a funny story told of the progenitor of this instrument. Some Arabs having surprised a detachment of French soldiers in Algeirs, the band of the regiment fled in disorder. A fleet horseman pursued the unfortunate ophicleide player, who encumbered by his instrument, gave himself up for lost. The Arab approached, fury in his eye, with couched lance; when, just as the musician was on the point of receiving his quietus, terror inspired him with wit; he presented the instrument like a gun, at his foe, and the Arab wheeled about, fancying it was a portable ten pounder, and fled from the field, leaving the musico equally astonished with himself, and far better pleased by his ready *brass.*

A Yankee in London.

The following description of London, from the pen of a wandering Yankee in that city, gives us a full knowledge of the great metropolis.

"London is a small, thinly inhabited place, containing about three millions of men, all sorts of women, and some children."

He talks much in his letter of the lions he has seen; among the rest, Jenny Lind, and states his expedient for gaining access to the theatre, from which all were precluded who were not in dress coats, his being a frock; he *pinned up the skirts inside,* and passed in the jam—thus coming the Yankee over them,

Naples. Eruption of Mount Versuvius.

On the 2d of August towards evening, there was an eruption of Mount Vesuvius. A torrent of lava fell from the new crater, and in about thirty-five minutes, reached the Piano del Ginistro. In many points of the old crater the soil was cracked, and great masses of fire were visible. On the 5th, about midnight a fresh torrent of lava fell in the direction of Basco Reall. It was fifteen feet broad. The two new small craters were seen vomiting burning stones, and increasing the fear of the inhabitants.

The Doctor's Coat.

A doctor once returned a coat to his tailor, because it did not exactly fit him. The tailor, afterwards seeing the doctor at a funeral of one of his patients, said to him, "Ah, doctor, you are a happy man."—"Why so?" inquired the doctor, "Because," said the tailor, "you never have any of your bad work returned upon your hands."

Important Announcement.

One of our exchanges announces that the distinguished personage known among the ancients by the name of *Cupid*, has recently changed his name to *Cupidity*, and will hereafter devote his attention to matters of money, as well as love affairs.

Matrimony.

A clerk, down east having one morning in church proclaimed the bands of matrimony between a 'gal' and her 'feller,' was followed by the clergyman reading a hymn of Watts beginning thus:

'Mistaken souls, who dream of Heaven.'

Seven quarters to a ton of British measurement is the calculation for ship's freight.

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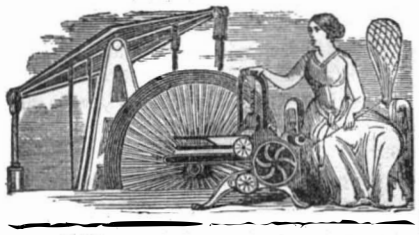


New Inventions.

The Annunciator.

The Patent Annunciator is a recent invention by T. D. Jackson, of Brooklyn, designed for steamboats, hotels, &c. It is a great improvement over the present system of signals from the different apartments of houses, cabins, or otherwise. The front of the machine represents a picture frame, surrounding a white dial upon which are the numbers of the rooms, and these are covered by small semi-circular shields or drop plates. On pulling a cord a single gong inside of the works alarms from all: the shield falls from its own gravity to the lowest possible point, discloses the number and springs back to its proper place by placing a handle at one end of the machine. Being very neatly and compactly manufactured, it forms an excellent counter piece, or it can be conveniently set in the wall, when the motion is observed by means of a glass back.

Engraved Plates.

Mr J. A. Pease, of Philadelphia, has invented and patented a new process for engraving on plates. It is said that the plates executed by his process will compare with those engraved by the present laborious and expensive mode. By this process fifty can be made while one is being done by the old method, and they can be afforded at one-half the usual prices.

New Lock.

Mr. Jones, of Newark, N. J., bank lock maker, has a new invention which is intended to be placed over the key hole of a lock, to prevent powder or combustible material from being put inside, which is often done by burglars for the purpose of blowing off the lock. The invention is very ingenious, and perfectly secure against attempts to open a lock, by means of picking.

New Grain Feeder.

Mr. T. C. Floyd of Cleveland, Ohio, has made a most important improvement in feeding the grain into the eye of the stone, whereby the hopper is dispensed with entirely, and the grain distributed in a most regular and beautiful manner; and as the speed of the stones is increased or diminished, so is the grain regulated in exact proportion; and though the motion of the mill be ever so irregular, the miller has no trouble to regulate his feed after he has set his lever for the quantity he wishes to grind.

Boot Tree and Last.

Messrs. Howe and Sessions, of Worcester, Mass., has invented a tree and last of cast-iron for boots, which is worked by a lever and treadle which opens the boot to the required size. The tree and boot can be easily turned round on the lever, and when the boot is treed the machine is closed and the boot easily taken off.

New Water Power.

By one of our foreign exchanges, we are informed that an English clergyman at Brussels, Belgium, has invented a motive power which promises to rival steam. It is founded on the compression of fluids Eight pails of water is computed to be sufficient to carrry a vessel from Europe to the East Indies. Too good news to be true.

New Life Boat.

A new life boat, of capabilities and safety never before obtained, was tried lately by the British Admiralty, who have given it their strongest approval. The boat was 30 feet in length, 9 feet beam, has double sides and air tight ends; 135 men were placed in her, and she took in all the water that she could gunwale under, and when she righted gave a 15 inch side, in fact, it was found impossible to sink her. She sails very fast, stays in 32 seconds, and weighs only 17 cwt. She will carry in her lockers a month's provisions for 50 men. The novelty is principally in the form of the boat.

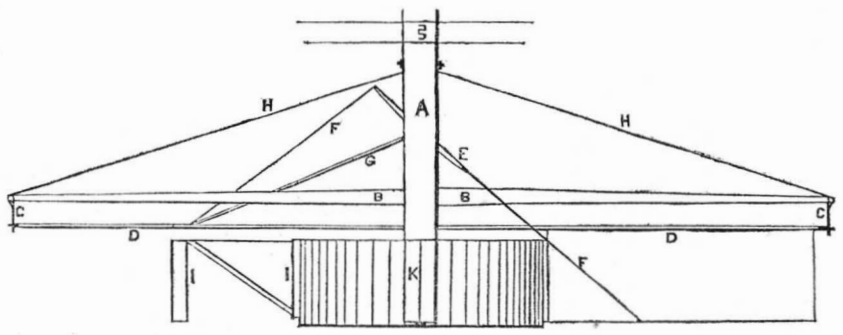
A New Brick-Making Machine.

A brick-making machine, of simple construction, has recently been completed by Messrs. Thomas Pearson & Co., Liver Foundry, Parliament-street. The clay, without any previous preparation, is put into the machine, where by the action of two sets of cutters, it is prepared and carried forward by the aid of buckets and elevators, and deposited into a hopper. It then descends upon a revolving table set with dies, into which it falls, and, after being closely pressed, is driven, by a slight movement of the machinery, to the surface of the table again, from which it is taken by the carriers. The bricks are then ready, without any further process, for the kiln, saving all the time necessary in the ordinary method of preparation in the pit, and drying on the ground. Shrinkage is thus considerably lessened, and the article, it is said, is of more perfect shape, and much superior to those completed in the ordinary manner. It is calculated that the machine, which completes two at the same, will turn out on an average thirty per minute.

The above description, taken from the London Sun, appears to be descriptive of a machine which we have seen in operation here; and described in No. 17, Vol. 2, Scientific American, but the bricks made by it crumbled and were easily broken. So we would predict, will be the case with the English bricks.

SHERROD'S FAN WATER WHEEL.

Figure 3.

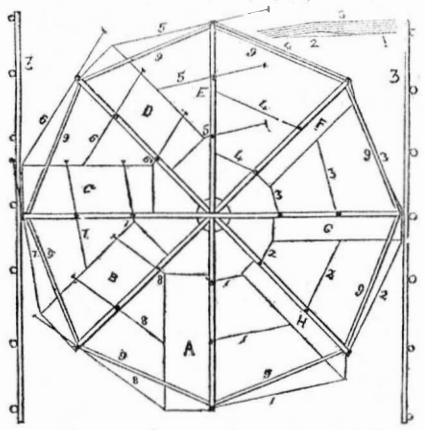


Two engravings of this Water Wheel have already appeared in the columns of the Scientific American, and the utility of the invention has been highly approved of by many capable of judging in regard to these matters. A more extended description with other drawings relative to those parts which could not be displayed in the previous published engravings No. 2, Vol. 3, is now presented and the whole cuts and descriptions will now explain to the fullest extent the construction and operation of this wheel in such a plain and simple manner "that he who runneth may read."

Fig. 3 shows the plan of the wheel where only one depth of paddle is used. A, the shaft. B B, the arms. C C, are collars griping the ends of the arms with a part projecting downwards to receive the journals of the paddles, D D. The journals on the other side of the paddles are seen resting in the shaft not united as shown in fig. 1, published on the 9th inst. E, is a working beam pressing through the shaft and fastened centrally. F F, are iron rods fastened to each end of the beam—their lower ends to the paddles. By this arrangement when one paddle is vertical the other must be horizontal. G, shows that a rope chain or strap passing through the shaft on a roller and fastened to the paddles will effect the same purpose. I, shows a post, meaning thereby that a number of such may be placed at proper distances to support a circular rail, upon which the paddles may be drawn around by having friction rollers in them at the point of contact with the rail. The end farthest down the stream should form an inclined plane, extending below the surface of the water to receive the paddles with ease and without injury. This mode of supporting the circular rail with fixed posts, as shown at I, or by the frame work attached to the drum K, at I, could only be used where the current was only in one direction. Another mode of operating these paddles is to draw or float them around upon the surface of the water independent of each other, they assuming the vertical position by means of their gravity and the force of the stream. L, at the top of the shaft A, shows that the paddles may be united so as to change the position of each other, as described in the publication of fig. 1. Any desired diameter can be given to this wheel, as the length of the arms can easily be supported, as shown by H H.

Figure 4.

Fig. 5.

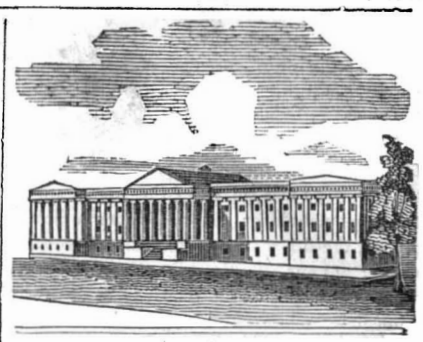


Shows the arms of the wheel meeting in the shaft, supported by the braces marked 9, with the paddles in moving position immediately under them, and may be imagined to be in any of the condition above described, but without those parts attached. A B C and D, are in a horizontal position, F F G and H, are vertical. The rods marked with 1, 2 3 and 4, are holding the paddles against the force of the stream The rods marked with 5, 6, 7 and 8, are seen pushed back through the loops on the arms of the wheel by the paddles to which they are attached assuming the horizontal position. The rods could pass through the arms just as well as through the iron loops. I, shows the space to be occupied by the drum K, in fig. 3.

Fig. 5.—1, shows the bed of the stream running in the direction of 2, which is a dam. 3, the stream.

In many cases where the raising of the of the stream would not back the water injuriously this mode of increasing the velocity of streams might be resorted to with great profit. as the expense would be trifling. The stream can be confined by means of posts, with outside braces and boarded up on the inside, as shown by Z Z. This mode of confining the stream would frequently apply with great advantage to only half the diameter of the wheel, especially in small streams with no reverse motion. It can easily be seen that this wheel needs no changing to meet the tide, but is always ready for a change of current.

Application, as before stated on the publication of figures 1 and 2, will be made for letters patent for the foregoing described wheel, by the inventor, Mr. W. Sherrod, of Providence, R. I.



LIST OF PATENTS

ISSUED FROM THE UNITED STATES PATENT OFFICE,

For the week ending Oct. 16th, 1847.

To Henry Underwood, of Tolland, Conn., for improvement in lap cutting and beveling leather Patented Oct. 16, 1847.

To Charles Luxton, of New York, for improvement in Swings. Patented Oct. 16, 1847.

To Mark Fisher and William Martin, jr., of Newport, Maine, for improvement in welding cast iron to malleable iron or steel. Patented Oct. 16, 1847.

To Charles Gardiner, near Richmond, Dallas Co., Alabama, for improvement in Cotton Presses. Patented Oct. 16, 1847.

To Lewis Kirk and John Dodworth, of Reading, Penn., for improvement in lubricating compounds. Patented Oct. 16, 1847.

To Andrew Caldwell, of Lexington. Ky., for improvement in cutter heads for planing machines. Patented Oct. 16, 1847.

RE-ISSUE.

To Charles Kane, of New York, assignee of J. Wright Warren, jr. of Boston, Mass., for improvement in portable Baths. Patented July 31, 1840. Re-issued Oct. 16, 1847.

INVENTIONS AND CLAIMS.

Rocking Chair and Fan.

Invented by Charles Horst, of New Orleans La. Patented 7th August, 1847; anti-dated 8th February 1847. What he claims as his invention and secures by Letters Patent is the combination of a Rocking chair and fan, in such a manner that the movement of the chair upon its rockers will operate the fan.

Harvesting Machine.

Patent issued to Martin Butts & Laurette Church, administrators of the estate of Damon A. Church, late of Friendship, N. Y., deceased; Lovett H. Obert, of Friendship, N.Y, Weston H. Willoughby, and O. F. Willoughby, of Chicago, Ills. Patented 7th August, 1847. Having fully described the nature of their improvement in the manner of forming and combining the knives, or cutter, used in machines for reaping and mowing, What they claim therein as new, and secure by Letters Patent, is the forming of such knives solid at their inner angles, as described and represented, and for the purpose set forth.

Latches.

Invented by R. Kinsley of Springfield Mass. and secured by letters patent on the 7th August, 1847, for making the case of Mortise Locks, in the form of two cylinders running into each other, the chord where the two cylinders forms are united is less than their diameter and is combined with a bolt having its greatest width in a plane passing through the axis of the two cylinders described.

Threshing Machine.

Invented by David Anthony of Sharon, N. Y.—Patented 7th August, 1847. What he claims as his invention, and secures by Letters Patent, is the mode of constructing the beaters upon the main cylinder V, and the combination of the latter with the bed cylinders A, A, provided with the discs Z, Z, Z &c., therein described: the whole being constructed and operating substantially in the manner and for the purpose set forth and described.

Reaping Machine.

Invented by Obed Hussey, of Baltimore, Md. Patented 7th August, 1847. What he claims is the opening above the blades at A, fig. 3, and at D fig 1, in combination with the vibrating blades. He also claims the particular application of the flush edge at the fork of the blades, for the purpose described. The end and design of the improvements above claimed is to prevent the blades choaking.

The letters refer to parts of the specifications.

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NEW YORK, OCTOBER 23, 1847.

Modern Science—The Electric Fluid.

Electricity is often called by the above name, yet no investigation has as yet resolved it into a substance like water, which may be contained in a vessel and be visible to the eye. We are perfectly ignorant of what electricity is, and are only acquainted with the method of applying this powerful agent to useful purposes. Among the most useful purposes for which electricity has been employed is electro telegraphing. By it a message can be conveyed 300,000 miles in five minutes, and a single spark noted at the distance of 288,000 miles in a second of time. What a subject for wonder. By this discovery the Eternal Creator, for some good and great purpose in the scheme of his Providence, has conferred upon man a portion of his Omnipresence, and we consider that all the improvements in physical science tend to elevate and bring man nearer to perfection. It would not be wise to look upon science in any other light—it would be finding fault with the Governor of the Universe if we did so. We have no doubt but that in the course of twenty years more, we will be able to receive messages from the old world in as many hours as it now takes days. If any one doubts this, we would say that twenty years ago no person would have been considered safe from the charge of insanity if he suggested the possibility of a portrait being taken by placing a silverized plate in a wooden box containing a mirror, before which the person whose portrait was to be taken had only to sit for a few seconds. But every person knows this to be a universal practical truth. This is truly the age of inventions, and we cannot but look upon the great improvements in science and art and the new applications of old principles in any other light than as evidence of a loftier faith progressing in the hearts of men and physical developement towards a purer morality. If we do not view progressive science in this light, we will not be able to be a co-worker with Science for such objects. In the language of Peabody, "Science is one vast whispering gallery which echoes from its walls from side to side, the name of Jehovah.

Art, Nature and Machinery.

The earth owes more to art than to nature after all. Till the effect of clover and plaster on sand plains was discovered, our barrens were as unproductive as rocks. Since that discovery, however, they have become the most valuable farms in the State. Till art took hold of apples the largest one grown was about the size of a walnut; the cabbage of nature was nothing but sea kale, while nature's unsophisticated peach was little better than a poison. Indeed, without art the product of our whole State might yet be carried to market in wheelbarrows—while the value of our lands would be about equal to those on the Rocky Mountains. The invention of the cotton gin increased the value of South Carolina land twenty-five per cent, because it saved that much in the expense of harvesting the crop. Without the plough, any land might be purchased for a shilling an acre. This being the case, our farmers should take more interest in the progress of machinery, than even our artisans. Not only their sweat, but their very substance depends upon it. Till the horse rake was invented, gathering hay into cocks was one of the most laborious works connected with the farm. Now, it is one of the easiest and most delightful, and what is true of raking, will soon be true of mowing and all the other toilsome work that has long been considered necessary to turn manure into bread.

Extraordinary piece of Copper Ore.

There is at present being exhibited in Liverpool, a most extraordinary piece of copper, from the mines of Pittsburgh, United States, which, in one block, weighs nearly two tons.

Prejudice against Machinery.

The old practice in making boards, was to split up the logs with wedges, and inconvenient as the practice was, it was no easy matter to persuade the world the thing could be done in any better way. Saw mills were first used in Europe in the 15th century; but so lately as 1555 an English Ambassador, having seen a saw mill in France, thought it a novelty which deserved a particular description.—It is amusing to see how the aversion of labor saving machinery has always agitated England. The first saw mill was established by a Dutchman in 1663; but the public outcry against the new fangled machine was so violent that the proprietor was forced to decamp with more expedition than ever did a Dutchman before. The evil was thus kept out of England for several years, or rather generations, but in 1768, an unlucky timber merchant, hoping that after so long a time the public would be less watchful of its own interest, made a rash attempt to construct another mill. The guardians of the public welfare, however, were on the alert, and a conscientious mob at once collected and pulled the mill to pieces. Such patriotic spirit could not always last, and now, though we have nowhere seen the fact distinctly stated, there is reason to believe that saw mills are used in England, and what could she do without them.

Emigration.

The first report of the Commissioners of Emigration of the port of New York, was presented to the Legislature on Tuesday last. It sets forth that since the 5th May last, 101,546 emigrants of both sexes have arrived at this port. Of said passengers there were natives

Of Germany,	43,208
Ireland	40,820
England and Wales	6,501
Holland	2,966
France	2,633
Scotland	1,856
Switzerland	1,506
Norway	881
Belgium	478
West Indies	265
Italy	130
Sweden	119
Spain 72, Denmark 51,	123
Portugal 31, Poland 21,	52
East Indies 7, South America 1,	8
Total arrivals since 5th May,	101,546

Safety of Railways.

At the recent presentation of plate to Mr. S. P. Westhead, by the shareholders of the Manchester and Birmingham portion of the London and North Western Company, Capt Huish stated, that the number of servants employed by the company, exclusive of about 2000 plate layers, was 6418; and that in a period stretching over 19 years, from the time at which the Manchester and Liverpool line was opened, the company had carried 55,000,000 passengers, while the late unfortunate accident at Wolverton was the first great calamity that had occurred. This, he thought, was sufficient to show that the company had done their duty to the public, and that the directors had exercised uncommon care and prudence in the choice of their servants.

Rotary applied to a Steamboat.

We have been informed of some experiments lately made at Portsmouth, England, the invention of Lord Cochrane, a name somewhat famous in the annals of invention. His engine, which has been in operation some years, was applied to propel one of the government vessels, but the experiment was a total failure. It made only six miles an hour and had to be towed out of a heavy sea by another steamer sent to compete with it on the trial.

Disinfecting Fluid.

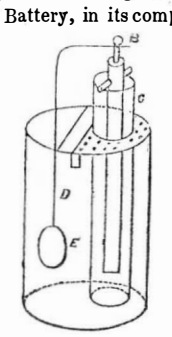
Professor Grant's new experiment of disinfecting a national vessel of the yellow fever, receives great commendation from officers of the navy. Commodore Stribling and Surgeons Corwick and Blackwell have made a report to the government of the operation on board the Raritan.

A meeting of Swiss sharp-shooters lately took place in the plain of Wyler, in the canton of Clarais. More than 15,000 riflemen assembled to contend for the prizes.

Electrotype and Electro Gilding.

NO. III.

We have already described the nature of the electrotyping process and the manner and means to be used in taking electrotype impressions, and to make a unique and a simple constant battery all that the amateur has to do, is to get a neat copper vessel, like a large jelly can for keeping preserves, which is to be the outside vessel or cylinder of the electrotype battery. He must then get some plaster of Paris and mould the interior, or inside cell, which should be about in proportion to the outer cell as represented by the engraving underneath. The plaster mould must be hollow which can easily be made so by a turned stick of wood, which should be narrower or of less diameter at the one end than the other, so that it may easily be drawn out of the plaster when it gets hard. The plaster of Paris has but to be mixed with water to perform the part we have described. It hardens very fast, but makes a good inside cell. We have already described the mode of preparing moulds of wax and covering them with plumbago, (blacklead,) and how to apply the apparatus to produce fac similes of medals, &c.—We will now exhibit the mode of operation more fully by the following cut of a Single Cell constant Battery, in its complete form.



B, is a rod of amalgamated zinc, the process of amalgamating being explained last week in No. 2, we need not again repeat. E, is the mould attached to the copper wire. D, a solution of sulphate of copper. C, a tube of pourous earthenware, or what we have already described, a cell of plaster of Paris, containing a solution of weak sulphuric acid. The dotted semicircular shield is a copper shelf near the top of the cell (outside cell,) on which a quantity of the crystals of sulphate of copper are to be placed to feed the copper solution as it is deposited on the moulds in the process of decomposition. To put this battery in action pour the copper solution into the cell, and pour in the acid solution in the plaster cell, or tube, and place it as shewn in the figure, and having all fully complete and perfectly arranged, put in the bent wire, having the mould at one end and attached to the zinc rod, which is placed in the interior cell by the other end. The mould must be cautiously and carefully entered in the liquid so that the blacklead may not be displaced, which in that case would spoil the mould and a dirty dark deposit be the result instead of pure copper. To guard against this, it is necessary that every thing should be arranged before the mould is placed in the situation allotted to it. The circuit should be completed by immersing the mould last.—With this precaution the immersion of the moulds, if of metal, will be followed by an immediate discharge of copper on its whole surface, after which there is no fear of oxide There is a curious circumstance connected with these experiments, which is, that the surface of the fusible mould is never wet by the liquid in which it is placed, and when the copy of the mould is removed, it is both bright and dry. Upon a wax mould the deposition is not so instantaneous as upon copper moulds.

Copper Ore in the South.

The Dalton, South Carolina, Eagle of the 1st inst., says: "We learn that six hundred tons of copper ore is shortly to be shipped from here to Boston. It is found in great abundance and of the richest quality in Polk Co., Tenn., and Cherokee Co., N. C., where a company of Germans are engaged in working the mines. We have seen several chunks of the ore at the Depot, which seems to be almost the pure metal itself. The wagons are to commence hauling the ore from the mines to the Depot, next week."

Southern Manufactories.

The Charlestown Courier notices the commencement of a new era in the domestic history of South Carolina—the projected establishment of a Cotton Factory in that city, the corner stone of which was laid about a fortnight since, with appropriate ceremonies, and in presence of a numerous assemblage of ladies, as well as gentlemen, all of whom manifested the deepest interest in the undertaking One of the directors of the company delivered an address on the occasion. The edifice is intended to be 156 feet in length by 50 in breadth, and three stories in height—calculated for 3000 spindles and 100 looms, that will turn out 24,000 yards of cloth per week, and employ upwards of 100 operatives. An engine of 70 horse power is to move the machinery. The introduction of these New England fashions into the South, will eventually be productive, in various ways, of the most beneficial results.

One of the correspondents of the same paper gives an account of the machinery, in operation in Spartenburg district. There are six cotton factores, with 4172 spindles, besides two woolen factories; also, five establishments for the manufacture of iron, two of which turns out annually 5000 tons of iron. This exhibition of the manufacturing spirit speaks well, certainly for the progress of industry and enterprise in the south.

High Prices.

The Kingston, Canada, Chronicle, says, an old settler in that town informs him, that in 1790, his father paid $48 for a bushel of corn to plant, it being a year of almost famine in that vicinity. The Detroit Free Press copying the above, adds, "We too can say a word about high prices. A cargo of flour arrived here in 1815. from Erie, at $6 per barrel for the freight. In 1816, flour was sold here at $25 a barrel, and early in the spring of 1818, it was retailed by the 20 lbs. at the rate of $50 the barrel, and corn at $8 the bushel."

Made Land in Boston.

We learn from a *sermon* delivered by the Rev. Mr. Rogers, says the Olive Branch, that while the city of Boston proper, originally contained but about 600 acres of land, it now embraces 1300 acres; so that 700 acres have been artificially added by the spade, and most of this within comparatively a very few years. It therefore appears that more than one-half of the city has been *manufactured!* and the machinery is still in operation extending the area of the city of notions.

Scuppernong Grapes.

The North Carolinians have discovered in their state, a grape of peculiar qualities, to which they give the name at the head of this article, taken from the locality where they were found in a wild state. The vines grow with wonderful luxuriance, and produce abundantly a large green fruit, hanging in clusters composed of three or four grapes each, but possessing a very fine flavor The Carolinians are civilizing the vine and making wine from it, of excellent quality.

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The second volume of the Scientific American, bound in a superb manner, containing 416 pages choice reading matter, a list of all the patents granted at the United States Patent Office during the year, and illustrated with over 300 beautiful descriptive engravings of new and improved machines, for sale at this office—Price $2,75. The volume may also be had in sheets, in suitable form for mailing—at $2.

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A Glance at the Heavens.

Of all human sciences there is none that swells the mind at the beginning with the feeling of the wondrous powers of man, there is none that abases it in the end with the conviction of its insignificance so much as Astronomy. How marvellous that a creature confined to this little spot of earth should be able to speculate on objects that lie severed from him by distance inappreciable! And when he comes back from those stupendous bodies and the dim regions in which they are fixed, to the animated grain which is himself, is it possible that a thing so minute can stuff itself out with vain thoughts of power and glory that would compass the world! In contemplating the phenomena which the sky of night displays, we seem to feel for the first time the words INFINITY and ETERNITY. Not that we have in reality attained to the conception of these things; but our capacity to apprehend them is now strikingly manifested. Yes, strive as we may, travel to the utmost distance whereto the wings of thought can carry us, descend or ascend the chain of succession as high or as low as we are able, we discover after all that our Eternity is only Time, our Infinity only space. Of late the eye of man has penetrated into greater depths than ever it was permitted to survey before, and his notion of time has expanded in a proportionate degree, yet no where can he find anything that affords the least sign of end or limit. The further we go, the more are we convinced that there is no bound or circumscription. If the possibility of a discovery of that kind ever presented itself to the mind of man, he might just as well have kept his eye upon his own planet for aught that he has found beyond it The mind is unable to comprehend the dimensions of Space, how then can it understand Infinity?

If we direct our eyes to the unclouded heavens on a moonless night, we may possibly descry four kinds of stellar bodies that emit light. First, we may see one or two stars that shine with a steady lustre: next, we may perceive a star with a train behi then we shall discern a vast multitude of bodies that throw off a twinkling radiance, and lastly, we shall observe objects that have the objects that have the appearance of light vapours, of which the milky way is the finest specimen, but there are many small ones differing in size and distinctness. Now, it turns out upon investigation that the objects we alluded to first, as shining with a steady lustre, are bodies that revolve in the same direction round that mass about which the earth circulates, and consequently, that they are parts of what we term the solar system. This system consists of twelve planets, compelled by the force of attraction to wait upon one central body. Some of these planets are in like manner the centre round which other spherical bodies move. The earth has one such attendant, Jupiter has four, Saturn has four, and Uranus is supposed to have six. In these subordinate systems all the laws of gravitation are seen in operation, which we have learned from the motion of the primary planets. The planets move round the sun from west to east, and the satellites round their respective planets. With respect, however, to the moons of Uranus, it has been found that they have a motion from east to west The relative distances of the planets from the sun may be roughly indicated by these numbers; taking the distances of the earth to be represented by 10, then 4, 7, 16, 26, 52, 100, and 196, pretty nearly represent the distances of Mercury, Venus, Mars, Vesta, and her three asteroids, Jupiter, Saturn, and Uranus. Now as the earth is about 23984 of her semi-diameters (or ninety-five millions of miles from the sun) it may be readily ascertained from the above numbers what is the distance of the other planets—for instance, nineteen times 95 millions of miles separate Uranus from the sun, and we may perhaps from a clearer conception of this distance if we consider that as light travels at the rate of 192,000 miles per second, it would take two hours and four minutes to convey intelligence from one to the other, by means of a Light Telegraph. We need not now state the relative sizes, densities times of revolution, and so forth, of the planetary bodies. They differ in all these respects very considerably, and as to size, it may be sufficient to say that if a globe of four feet diameter represent the Sun, our earth would not be larger than a pea at a distance of 430 feet, whilst Jupiter would be an orange half a mile from it.

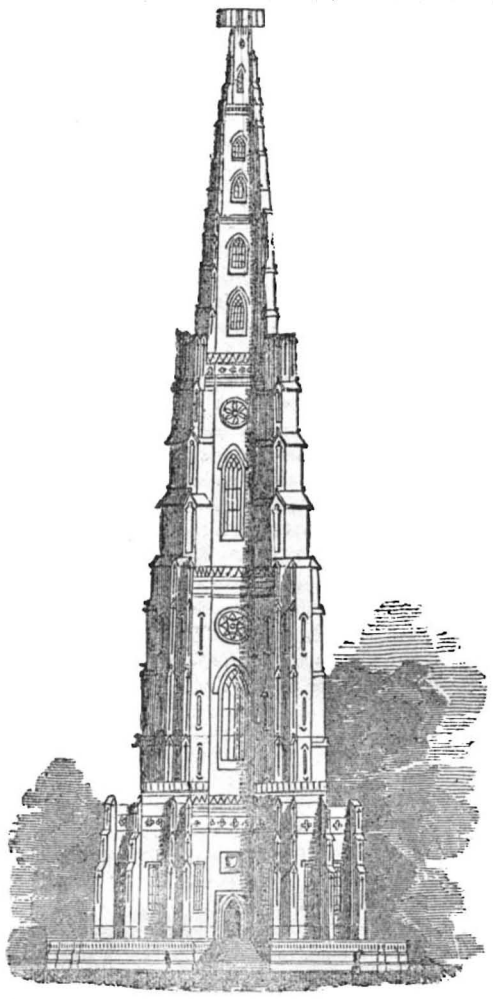
(To be continued)

Shakspeare's House.

After two or three biddings the Shakspeare joint committee af Stratford and London offered £3,000 for the house, at which price it was knocked down, and has therefore become the property of the nation, and will henceforward be in the custody of the Commissioner of Woods and Forests.

The earth is believed to increase in heat a degree in every fifteen or twenty yards in depth.

WASHINGTON MONUMENT.



TO THE

GOOD AND THE GREAT,

"FIRST IN WAR—FIRST IN PEACE—AND FIRST IN THE HEARTS OF HIS COUNTRYMEN."

In honor of laying the Corner Stone of the

WASHINGTON MONUMENT,

BY THE ASSOCIATION,

OCTOBER 19, 1847.

TRUSTEES.

E. K. COLLINS,	JOHN PAINE,
JOHN LEVERIDGE,	WILLIAM F. PIATT,
JOSEPH C. HART,	WILLIAM HALL,
HENRY STORMS,	HAMILTON FISH,
THOMPSON PRICE,	ELIAS G. DRAKE,
W. C. H. WADDELL,	SHEPPARD KNAPP,
CALVIN POLLARD.	HIS HONOR, THE MAYOR.

The above is an engraving of the monument to be erected to George Washington, the great and good—to him who was first in war, first in peace, and first in the hearts of his countrymen. It will be observed that it is very different from the rejected design which has been published and sent forth as that of Mr. Ballard. The above design is that of Calvin Pollard, whose architectural taste, and that of the association of the monument, was not bounded by the narrow penurious consideration of cheapness. We cannot say however, that we entirely approve of the design.—It is an amalgamated style resembling the Flemish Florentine so common in the fifteenth century. Washington's Monument should have been pure Grecian, the republican style, and which rising in simple grandeur above all the structures in our city would at once convey to the mind of the beholder an idea of a monument, not a spire, erected to Him who was "like Cato firm, like Aristides just." But as the association nas not been guided by parsimonious views in erecting a structure to the memory of the Father of our Country, we trust in the erection of this monument there will be a beauty of finish and a harmony of parts which will result in the grandest tomb ever erected to sage or warrior. George Washington! what a name! His fame fills the world, and on the Tuesday the 19th day of October, 1847, the citizens of New York vied with each other in paying respect to his memory by walking in one of the most georgeous processions and largest that ever was seen in the world, to lay the foundation stone of his monument.

The procession was divided into 13 divisions and made a most noble appearance. The whole number on the ground could not be less than 200,000. Gov. Young laid the foundation stone and made a short and appropriate address. We were well pleased with the appearance of the different Mechanics' and Artisan Associations. They did honor to their country. The Mechanics' Mutual looked very neat and turned out strong. We are glad to see this association increasing in numbers.

To all about to Marry. A Paris Harem.

A new journal called the Harem has just made its appearance; and what think you is the object of this queerly-named broad sheet? Why, it is to serve as a medium of communication between people who want to get married. Ladies in want of husbands are to write letters to it, setting forth their personal charms, and the amount of their fortunes, together with any other particulars they may think likely to enhance their value in the matrimonial market; and gentlemen are to write similar communications. It is in fact to be an advertising paper for would-be wives and would be husbands.

The papers say that the hair of a lady in Hartford, Conn., measures 9 feet 4 inches in length, while she is only 5 feet 1 inch high. It would be a *pleasant* job under certain circumstances, to comb it.

Railway Bridge Building.

There is one fact connected with the employment of cast-iron girders for railway bridges which is very important. Cast-iron is a remarkably hard and rigid substance, bnt exceedingly brittle, and though it will bear an enormous pressure, gradually applied, without fracturing, it will break under a comparitively trifling blow. Now, when a cast-iron girder is used to carry the wall of a building placed above it, the weight is gradually laid upon the girder; and, when finished, it is subject to no particular variation, and the girder supports its burden firmly and securely. But when a cast-iron girder is applied to carry a heavy train across a bridge, the weight it has to bear is very suddenly, and with express trains, almost instantaneously, thrown upon the girder, and as suddenly removed; and hence it assumes, to all intents and purposes, the character of a blow, and the girder is subjected to a strain which it is quite unfitted to bear. Rolled iron rails should invariably made use of, because it is a well-esatblished fact that cast-iron rails would fracture under the rapid speed of a train, and yet cast-iron is recklessly employed in the form of girders, which are only rails of much larger kind — Iron girders tested by the hydraulic press, does not prove their fitness for railway purposes, because the power of the press is very gradually applied, and as gradually relaxed. A cast-iron girder ought never to be trusted to bear a vast weight suddenly placed upon it and as suddenly removed; and therefore, cast-iron girders should never be used for the means of railway transit, as in every case they are subjected to a strain which, from their very nature, they are unable to bear.

Animated Nature.

There are four types, or great tribes of animals charocterized by peculiar external appearances as well as by internal differences of which the nervous system presents distinct characteristics in them all. Above all these stands Man, as peculiar in his nervous system as in his physical conformation for distinctive characteristics which mark him to be the lord of creation. Man stands and walks erect; he can lift his eye towards heaven and gaze upon the distant spheres as they roll in illuminated grandeur. From the conformation of the earth, the successive changes through which it has passed, and the peculiarity of those changes, there is abundant testimony to the eye and mind of the philosopher. that the earth was created and prepared for the abode of man. By all the investigations of Geologists, at no one geological epoch has there appeared to be any animal which stood pre-eminent above the rest. Man by the investigations of science and the revelation of divine history, has been created lord of the creation.

Animal Sagacity.

An unfortunate dog in order to make sport for some fools, had a pan tied to his tail, and was sent off on his travels towards Galt Scotland. He reached the village utterly exhausted, and lay down before the steps of a Mr. Young's tavern, eyeing most anxiously the horrid annoyance hung behind him, but unable to move a step further, or rid himself of the torment. Another dog, a Scotch colly, came up at the same time, and seeing the distress of his crony, laid himself gently down beside him, and gaining his confidence by a few caresses, proceeded to gnaw the string by which the noisy appendage was attached to his friend's tail, and by about a quarter of an hour's exertion severed the cord, and started to his legs with the pan hanging to the string in his mouth, and after a few joyful capers around his friend, departed on his travels in the highest glee at his success.

Peculiar Enjoyment.

The editor of the Vera Cruz Eagle says:—"We had the pleasure of enjoying an invitation to be present on the occasion of an amputation of two legs on Saturday last."

Relief of Hypochondriacs.

A French surgeon states that, by fitting bedsteads with glass feet, and isolating them about 18 inches from the wall of the apartment, he has cured the patients sleeping on th em of a host of nervous affections.

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TO CORRESPONDENTS.

"T. C. F. of Cleveland, Ohio."—We shall do as directed—the Journal will cease then to be published. The present volume of the Scientific American will be the most splendid Encyclopedia of Science and Inventions ever published. The terms for clubs are $15 for 10 copies for one year, or 5 copies for $4 for 6 months.

"E. H. of Mass."—We agree with you that it is by the constant dropping of the weight of a clock that the machinery is propelled.—But how is this done? The weight would never escape from the clutches without some power to move the escapement. Thus there are two powers at work to propel a clock, like that force which first flung the earth in its orbit and the other which sustains it there. The weight seeks the centre of gravity, the pendulum allows it to reach it in a certain period, or as you justly observe, "measures the time." There is, however, what is called the eccentric clock applied to a lathe, which we have heard has been used for turning silver work. Can you give us any information respecting the qualities and construction? In regard to Mr. Bottsford's clock at Harper's Ferry, you will perceive that we referred to its novelty in that place only. There is a great want of general information relative to clock and watchmaking, and with your practical experience and correct theory, you could impart much useful knowledge on this subject.

"J. K. of Ct."—We must refuse the insertion of your article, on account of it being written on both sides of the sheet and not very plain. We will not correct and arrange any piece that is more than one column in length.

"K. of Maine."—The composition for roofs appears to us to be nothing more nor less than (from the sample we have seen) pitch strewed over with very fine gravel and sand.

"J. P. of New York"—Shellac makes good cement or varnish. Dissolve it in alcohol.

"G W. V. V. of Salina."—Your communication next week.

"H. S. of Boston."—The letter containing the directions where to get the Organic Vibrator, has been mislaid, and we cannot give you the desired information at present, but will endeavor to do so at some other time,

"L. G. M. of Belfontaine, Ohio"—We have sent you the Constitution of the Mechanics' Protection. For information about the Order in Ohio, write to J. Palmer, Painesville, who will be happy to give you all the desired information. The nature of the Mechanics' Mutual is not very well understood. The State of Ohio is going ahead in the cause.

"R. V. R. of Mass."—From the great number of correspondents we are obliged to answer them by mail, for fear of occupying too much room in our columns. We are happy to receive your congratulations regarding the improvement "observed by all" in the Scientific American.

"H. S. of Iowa"—We are in possession of the description of an engine which has been in operation three years, propelled by heated air.

"R. T. A. of Boston."—No wonder you was surprised at the absurdity of heating water by heated air and ask "why not apply the condensing power to propel direct instead of wasting mechanical power first to produce chemical power. The great secret of modern mechanics, is the application of chemical expansion and contraction to produce mechanical effect as a secondary cause." Our surprise was no less than yours. The notion was never submitted by the author to the *crucis experimentum.*

"P. V. B. of N. Y."—It is a fact well known to chemists, that in the act of crystalization, the various atoms, or crystals depend much for their form upon the shape of the first crystal. To produce beautiful and large crystals give the solution plenty of room to crystalize.

"J. L. P. of S C."—We will give your communication regarding the galvanic battery due attention.

"J. S. A. of N. Y."—Your letter with money is received and the engraving shall appear very soon.

"A. W. of Maine."—Your system of steamboat propulsion is exactly the same as a drawing that we had sent to us about two months ago, with the single exception of the pulley B, to tighten or loose the band. This system is not new and it would not answer, as it has been fully tested, for ocean navigation.

"J. W. S. of Cleveland, Ohio."—The Glasgow Mechanic and Practical Engineer, can be subscribed for and sent to you for $3 per annum. Address to this office.

Morfit's applied Chemistry—Soap and Candles.

This is a new work, published by Carey & Hart, Philadelphia. It is upon a most important branch of our manufactures, and it should be in the possession of every chemist and manufacturer. It has one hundred and twenty wood engravings, well printed and most ably and scientifically written.

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☞ The undersigned are prepared to receive proposals for extending the wires of the Magnetic Telegraph Co. over the Hudson River, at some point as near the city of New York as practicable

Proposals will be received until the tenth day of November next, and all necessary information can be obtained on application by letter or otherwise, to eithe of the undersigned.

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PATENTED.

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The improvement consists in being able to use either end of the screw, as occasion requires

It is capable of raising the heaviest Locomotive with ease, being portable, strong and powerful, and not likely to get out of order.

Many Railroad Companies and Boiler makers have them in use, by whom they are highly recommended.

JACK SCREWS,

Of various sizes, power and price, constantly on hand at the manufactory,

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For terms and particulars, apply to W. A ASHE, at his establishment, 133 Fulton street, opposite the Sun Buildings. o9

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OF
MAJ. GEN. ZACH. TAYLOR.

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Six cents per copy.

A LIBERAL DISCOUNT TO THE TRADE.

☞ *This likeness is warranted to be the most perfect of any which has yet been published, and the only reason for offering it at so low a price is to insure the sale of an immense quantity.*

The Portrait is encircled by a beautiful wreath, adorned and surmounded with appropriate designs.

Any person enclosing QUARTER OF A DOLLAR in a letter, shall receive FOUR COPIES by mail. Ten copies for fifty cents; Twenty-five copies for one dollar. Letters must be directed (post paid) to

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All new subscribers will be entitled either to the powerfully written Sea Novel, called the Meteor, or Cutter of the Ocean; or to the domestic novel of Walter Woolfe, or the doom of the Drinker.

In every city, town or village a club can readily be formed by any person who will give a few hours attention to such object. To all such who will remit us FIVE DOLLARS we will furnish Six Copies of the paper; including in every case the above premium

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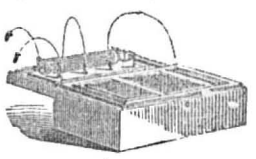
REMARKABLE CASE OF FITS CURED.



Dr. Smith's Torpedo Magnetic Machine.

☞ The following is an extract of a letter from Dr William Miller, No. 317 Broome st., New York

DR. S. B. SMITH—Sir: To show the superior efficacy of Electro-Magnetic treatment over every other, I will give you a case of Fits that I completely cured in two operations by the above process:—

A Mrs. Abrahams near Nyack, in Rockland Co, N. Y., came to me on the morning of March 13, 1846, with a child about 4 years old, who had for many months had fits regularly every day at 2 o'clock and 6 o'clock, P. M. The intellect of the child showed symptoms of decay from their frequency and severity. After the first operation the lady left for her boarding place, in full confidence that a cure was already effected, although I assured her it was not possible that one application could suffice. The next morning I found her waiting upon my office steps eager to inform me that both two and six o'clock of the afternoon passed without a return of the fits, and that she felt confident the child was cured. I bade her bring the child in and submit it another operation. She did so, and to this date the child has remained well. The cure was effected solely by the Electro Magnetic treatment, no other medicine whatever being given. I might give you many other cases where the cure has been perfect by a more lengthy treatment WM. MILLER,
August 19, 1847. 317 Broome st., N. Y.

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☞ We would inform Newspaper and Periodical publishers that we have on hand a large lot of Wood Engravings, which have been used in the Scientific American during the past year, which we are desirous of disposing of, CHEAP. They are in fine order and may be had at one fourth of their original cost. Publishers of country papers would find it to their interest to avail themselves of this chance to illustrate their publications at a cheap rate.

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He has the honor of referring, by permission, to Hon. Edmund Burke, Com. of Patents; Hon. H. L Ellsworth, late do; H. Knowles, Machinist, Patent Office; Judge Cranch, Washington, D. C.; Hon. R. Choate, Mass., U. S. Senate; Hon. W. Allen, Ohio, do; Hon. J. B. Bowlin, M. C. Missouri, Hon. Willis Hall, New York; Hon. Robert Smith, M. C. Illinois; Hon. S. Breese, U. S. Senate; Hon. J. H. Relfe, M. C. Missouri; Capt. H. M. Shreve, Missouri. j23

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REMOVED.

THE SUBSCRIBER has removed his Patent Agency from 12 Platt to 189 Water street.

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m8 3m* SAMUEL C. HILLS, Patent Agent.

Johnson's Improved Shingle Machine.

THE Subscriber having received Letters Patent for an improvement in the Shingle Machine, is now ready to furnish them at short notice, and he would request all those who want a good machine for sawing shingles, to call on him and examine the improvements he has made, as one eighth more shingles can be sawed in the same given time than by any other machine now in use.

Augusta, Maine, Oct. 1, 1847. J. G. JOHNSON.

Machinists Tools.

THE Subscriber is now manufacturing a superior article of Large Turning and Screw Cutting Lathes, Drilling Machines, &c. to which he would respectfully call the attention of Machinists and others requiring the above articles. Also, Machinery of every description, manufactured to order, at 42 Gold street, New York. G. B HARTSON. o2 1m*

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No. 189 Broadway, N. Y.

☞ Pictures taken at this establishment warranted to give satisfaction. j24

Veni! Vidi! Emi!

☞ THIS IS THE MOTTO OF ALL THOSE THAT HAVE EXAMINED KNOX'S NEW FALL STYLE OF HATS, with a view of buying—

I CAME! I SAW! I BOUGHT!

His BON TON Establishment (as all know) is at 128 Fultou street. s18 3m

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INVENTORS and Makers of superior Agricultural Implements are notified that the subscriber will sell such articles on commission, and make prompt returns. SAMUEL C. HILLS,
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AMERICAN HARDWARE.

THE SUBSCRIBER having been engaged in selling American Hardware on commission for 7 years, solicits consignments from manufacturers, and will refer to those who have employed him the above number of years. SAMUEL C. HILLS,
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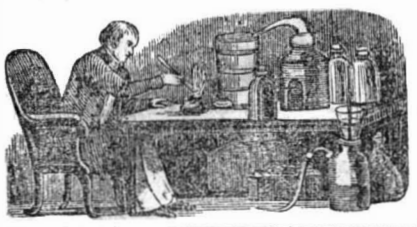


The Law of Fluids discharging through Orifices.

This law, generally, is that the velocity of issue is directly as the square root of the pressure, and inversely as the square root of the density; but this law neglects wholly the reaction that must arise from the expansion necessarily taking place in the course of issue. The nature of the action is illustrated by the following example: If a balance be supposed with an equal weight in each scale, one of the weights being a spiral spring, like that of a spring balance compressed lengthwise with its axis vertical, and held in a state of compression by a cord. Now let the cord be suddenly reversed, so that the spring is enabled to extend itself vertically; the scale in which it stands will obviously be depressed, the spring reacting on it as it expands upwards, and continuing to press till wholly relaxed; or if the scale in which it stands were ascending by a preponderance given to the other scale, the rate of its ascent would be in the same way retarded. The amount of the retardation would depend on the strength and the weight of the spring, and on the length to which it would extend itself when released. Now in the discharge of an elastic fluid, there is an action strictly analagous, operating continuously, however, instead of *per saltum*, the strength and weight of the spring being represented by the elasticity and density of the fluid, and the length to which it would extend itself by the degree of expansion, in the course of issue The reduction in the quantity of discharge, due to the action, is to be measured by the velocity imparted by expansion, to each particle of the elastic fluid in course of issue, the velocity of each particle after expansion, would be its velocity before expansion, multiplied into the rate of expansion, and the primary force must be subdivided in generating each additional unit of velocity, so that the portion applicable to the generation of velocity before expansion, would be the whole force divided by the rate of expansion; thus, the velocity before expansion would be divided by the square root of that rate. For instance, an elastic fluid four times in the course of issue, would be discharged with only half the velocity of a non-elastic fluid, under the same circumstances of pressure and density. This modification has been shown to fulfil the general dynamical law "that a given force, acting for a given time, will produce a given momentum, whatever be the weight of the mass acted upon." This seemed to be the essence of the law for non-elastic fluids, but it was disregarded by the unmodified application of that law to elastic fluids, in which there would be a great accession of velocity, of particles issuing under a given pressure, without any reduction of quantity discharged in a given time; if, however, the quantity be reduced as proposed, in the ratio of the square root of the density, and the velocity be accelerated in the same ratio —the final momentum would be the true equivalent of the pressure. This, in its practical application, explains what was inexplicable by the ordinary theory. the difficulty experienced from the back pressure of the waste steam in locomotive engines, and at 60 miles an hour, this would be equivalent at least to 8 lbs. per inch throughout the stroke, thus showing a loss of nearly 50 horse power. As applied to the case of air, discharged into an exhausted receiver, the result is highly curious. The rate of discharge, instead of increasing throughout as the degree of vacuum is increased, would be maximum at 15 inches vacuum, although nearly uniform for many inches above and below that point, it would, however, progressively decrease above that point, because the expansion would increase in a higher ratio than the pressure, and ultimately, at the point of perfect vacuum, it would be at a minimum (indeed stationary, were air perfectly elastic,) because at that point expansion would be infinite, but the pressure only finite—viz. 30 inches of mercury.

To Tin Iron and other Metals.

Prepare a solution of the chloride of zinc, which is done by feeding muriatic acid with scraps of zinc until it will take up no more. A strong glass bottle is the best vessel for this purpose. Let the solution settle and then decant the clear and it is ready for use. Next prepare an iron pot, of such size as will suit the purpose for the work to be done. Next put the pot on a fire and put in a sufficient quantity of tin to cover the work. When the tin is melted put in as much beef or mutton tallow as will cover it about one quarter of an inch thick, which must remain in a clear melted state, taking care not to let it get on fire. The iron, or any other metal to be tinned must be well cleaned, either by filing or scraping, or polishing with sand. Let the article to be tinned be then wet with the chloride of zinc and carefully immersed in the tallow and melted tin, and if the article be well cleaned, it will in a very short time be fairly and perfectly covered with the tin, when it may be taken out.

Now suppose you wish to tin a piece of plated metal, say a piece of copper plated on one side with silver, and you wish to tin the copper side but not the silver side, then prepare a paste, which may be of common pipe clay, and a very little wheat flour wet up with water Then take a soft brush and lay an even coat of the paste over the silver side and lay it in a warm place to dry; then when dry it may be immersed in the pot of melted tallow and tin as already described, and the copper side will be covered with tin, but the silver side will be protected from the tin by the paste, which may be removed by washing in water. If you wish to tin a piece of plate, brass, or any other metal on one or both sides, the above, if strictly observed, is sufficient in all cases, not regarding size and form.

JOSEPH P. JEFFERY.

Waterbury, Ct., Oct. 10, 1847.

Calculating Interest.

Mr. Editor:—

Having seen several rules published for calculating interest, and supposing that any improvement in so common an operation would be interesting to many, I send you one of my own make for calculating for days at seven per cent, more simple than any in use, and more accurate than any which supposes thirty days to constitute a month.

RULE FOR CALCULATING INTEREST.

Multiply the principal by the number of days, divide the product by 52 and cut off two figures to the right for decimals.

Yours, &c. WM. M. HAINES.

Rochester, Oct. 12, 1847.

[Mr. Haines is the inventor of the Mechanical Calculator.]—ED.

Mathematical Problem.

Mr. Editor:—

In a Mechanic's yard I observed two wheels each four feet in diameter, so placed that the first was in contact with an upright post, and the second on a level with it and at such a distance that a line drawn straight from the top of the post to the ground, passing over the one and under the other formed a tangent to both: while a second line from the same point above, passing over the second wheel and touching its periphery, reached the ground ten feet distant from the first line. Required the height of the post? J. E. H.

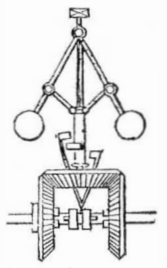
Musical Spit.

The most singular spit in the world is that of the Count of Castel Maria, one of the most opulent lords of Treviso. This spit turns one hundred and thirty different roasts at once, and plays twenty-four tunes, and whatever it plays corresponds to a certain degree of cooking, which is perfectly understood by the cook. Thus a leg of mutton, *a l'Anglaise*, will be excellent at the twelfth air; a fowl, *a la Flamande*, will be full of gravy at the eighteenth, and so on. It would be difficult, perhaps, to carry further the love of music and gormandising.

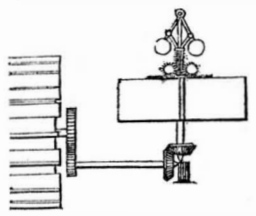
A swarm of bees contain from ten to twenty thousand in a natural state, and twenty to forty thousand in a hive.

MECHANICAL MOVEMENTS.

Applications of the Governor.



This is an application of the governor for regulating the supply of water to wheels.—The horizontal wheel is fixed to the revolving shaft which receives motion from the water wheel, the speed of which is calculated to place the balls in the position here represented, but should it increase and thereby raise the sliding piece, a projection from the left of the shaft would strike against the part immediately above and traverse the coupling on the horizontal shaft below into gear, with the left hand bevil, which being connected with the shaft, depresses the shuttle of the water wheel and reduces the speed, but should the speed be too slow and the balls collapse the same projection would strike against the parts immediately beneath it, and the bevil on the right would be connected with the shaft and turn it in an opposite direction, thereby raising the shuttle for a greater supply of water.



This is an arrangement for regulating the speed of the moving wheel to the left which carries the governor on the upright shaft to the right. To the sliding part of this governor are connected two racks which geer into the small spur wheels seen on either side of the upright shaft; the same wheels take into horizontal racks which are respectively attached to the broad flat surfaces immediately below them. Thus by the vibration of the governor which depends on the speed of the first mover, the broad flat pieces are carried out, or withdrawn, and the amount of resistance caused by their passing the air increased or diminished.

Macassar Oil.

This oil, so much lauded by advertisements, prints, &c., is nothing more than sweet oil and scented. The story of it being imported with fac similes of the proprietor's name affixed, is a mere fabrication to gull the public;—nine-tenths of the oil used in this country never was imported. The idea of its being brought from England was, from its being formerly made in England by a man named Rowland—occasionally, however, a phial or two reaches this country by order of private citizens. But the genuine is thought to be precisely the same as the American manufactured Macassar. The following receipt by an English druggist is thought to be the best in vogue:—Sweet oil 8 oz., Tinct. Cantharides 60 drops, Oil of Rose 10 drops, Oil of Bergamot and Oil of Lemon, each 60 drops. Alkanet root sufficient to color it.

Superior Mode of Curing Hams.

Mr. W. Stickney communicates for the public benefit the following superior mode of curing hams:—

I make a pickle of two quarts of salt, to which I add one ounce of summer savory, one ounce sweet marjoram, one ounce allspice, half an ounce saltpetre, and one pound brown sugar; I boil the whole together and apply the mixture boiling hot to one hundred pounds of ham, and keep it in the pickle three or four weeks

My process of smoking is not the most expensive, but may not be the less available on that account. I smoke the hams in a seed cask, with one head in, with a small hole for the smoke to get out; and hang the hams to the head. I use about a peck of mahogany sawdust for fuel and smoke them only but one week.

Curious Clock.

A Parisian watchmaker has completed the construction of a clock of a singular nature. It has eleven dials; the principal dial shows the hours alone; a transparent one immediately below the former shows the progression of the sun; two others, also transparent, and through which the mechanism of this immense machine can be seen, mark, the one the days of the month, the other the seconds. Eight square enamelled dials are arranged round the two sides of the pendulum, and show the hour in each of the following cities:—London, Algiers, Alexandria, St. Helena, Tahiti Canton, New York and St. Petersburg. Each of these dials is marked with 24 hours instead of 12, so as to show the hours of the day and those of the night. Lastly, the pendulum carries a large metrical scale, indicating the degree of contraction of metal. This clock cost 14,000 francs.

Cold Bedrooms.

A person accustomed to undress in a room without fire, and seek repose in a cold bed, will not experience the least inconvenience even in the severest weather. The natural heat of his body will very speedily render him even more comfortably warm than the individual who sleeps in a heated apartment, and in a bed thus artificially warmed, and who will be extremely liable to a sensation of chilliness as soon as the artificial heat is dissipated. But this is not all, the constitution of the former will be rendered more robust and far less susceptible to the influence of atmospherical vicissitudes than that of the latter.

Ductility of Silver.

They use the galvanic battery now for the purpose of precipitating platina so as to coat articles which it may be necessary to expose to strong acids. Articles so coated will resist the action of even concentrated nitric acid.—In the precipitation of silver by the same process, it is said that a six-penny piece can be made to coat a surface covering an acre.

THE NEW YORK

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☞For term see inside.

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